

110. Hydrazine N_2H_4 (used as a fuel in rocket system) can be produced according to the following reaction:
- $$ClNH_2 + 2NH_3 \rightarrow N_2H_4 + NH_4Cl$$
- When 1.0 kg $ClNH_2$ is reacted with excess of NH_3 , 473 g of N_2H_4 is produced. What is the percentage yield?
- (a) 76.12 (b) 67.21
(c) 26.17 (d) 16.72
111. Two successive reactions, $A \rightarrow B$ and $B \rightarrow C$, have yields of 90% and 80%, respectively. What is the overall percentage yield for conversion of A to C?
- (a) 90% (b) 80%
(c) 72% (d) 85%
112. Iodobenzene is prepared from aniline ($C_6H_5NH_2$) in a two-step process as shown here:
- $$C_6H_5NH_2 + HNO_2 + HCl \longrightarrow C_6H_5N_2^+Cl^- + 2H_2O$$
- $$C_6H_5N_2^+Cl^- + KI \rightarrow C_6H_5I + N_2 + KCl$$
- In an actual preparation, 9.30 g of aniline was converted to 16.32 g of iodobenzene. The percentage yield of iodobenzene is (I = 127)
- (a) 8% (b) 50%
(c) 75% (d) 80%
113. One mole of a mixture of CO and CO_2 requires exactly 20 g of NaOH in solution for complete conversion of all the CO_2 into Na_2CO_3 . How many grams more of NaOH would it require for conversion into Na_2CO_3 if the mixture (one mole) is completely oxidized to CO_2 ?
- (a) 60 g (b) 80 g
(c) 40 g (d) 20 g
114. When burnt in air, 14.0 g mixture of carbon and sulphur gives a mixture of CO_2 and SO_2 in the volume ratio of 2:1, volume being measured at the same conditions of temperature and pressure. Moles of carbon in the mixture is
- (a) 0.25 (b) 0.40
(c) 0.5 (d) 0.75
115. A mixture of NaI and NaCl on reaction with H_2SO_4 gave Na_2SO_4 equal to the weight of original mixture taken. The percentage of NaI in the mixture is (I = 127)
- (a) 82.38 (b) 26.38
(c) 62.38 (d) 28.38

Eudiometry

116. When 0.03 l of a mixture of hydrogen and oxygen was exploded, 0.003 l of oxygen remained. The initial mixture contains (by volume)
- (a) 60% O_2 (b) 40% O_2
(c) 50% O_2 (d) 30% O_2
117. A volume of 100 ml of air containing only oxygen and nitrogen is taken in a jar over water. NO is slowly passed till no more brown fumes appear in the gas jar. It is found that 42 ml of NO is required. The percentage of nitrogen in the air would be
- (a) 42% (b) 79%
(c) 21% (d) 39.5%
118. A mixture of methane and ethylene in the ratio of a:b by volume occupies 30 ml. On complete combustion, the mixture yield 40 ml of CO_2 . What volume of CO_2 would have been obtained if the ratio would have been b:a?
- (a) 50 ml
(b) 30 ml
(c) 40 ml
(d) 60 ml